**Agreement Between Written Diaries and Electronically Recorded Peak Expiratory Flow**

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**BACKGROUND**
- Daily peak expiratory flow (PEF) monitoring has been used in epidemiological studies to assess changes in lung function over time
- The value of written PEF diaries has been questioned because of problems with completeness and validity

**AIM**
To compare the accuracy of stored electronic PEF data and written diary records in an epidemiological study of Australian children.

**METHODS**

**Participants:**
- Children aged 7-11 years
- Attending primary schools in VIC and QLD
- Doctor or nurse diagnosis of asthma
- Respiratory symptoms in the past 12 months

**Recruitment:**
- Nationwide population based study
- Parents of eligible children recruited by telephone
- Diaries and electronic devices explained to parents and children during 20 minute meeting with research staff

**Electronic Peak Flow:**
- Mini-Wright Digital, Clement Clarke, UK - electronic PEF device with digital readout
- Stores highest session PEF with date and time
- Participants not informed of storage capability of the device

**Written Diary:**
- Parent recorded child’s PEF (x3), symptoms and medication use morning and evening for 4 weeks
- Diaries posted back weekly and reviewed by telephone call from trained staff

**Analysis:**
- Electronic data:
  - Recordings between 5–11am and 6pm–12mn analysed
  - Values > 3SDs above child’s mean excluded as artefactual
- Written data:
  - Highest written PEF of 3 calculated for each session
  - Comparison of written and electronic:
    - Missing electronic PEF: written PEF but no corresponding electronic PEF
    - Discordant PEF: > 10L/min difference in written and electronic PEF

**RESULTS**
- 48 subjects, mean age 10 years, 46% girls
- Mean of 25 (range 4-28) days available for analysis
- 8% of electronic records were made outside time window

**CONCLUSION**
These findings imply that missing and discordant data is common when study participants are asked to record PEF results onto paper diaries. Errors increase with duration of monitoring.

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